

PELYCIDIIDAE, A NEW FAMILY OF ARCHAEOGASTROPOD MOLLUSCS

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ABSTRACT

A new family is proposed for Pelycidion Fischer (= Allixia Cossmann and Nannoteretispira Habe), a genus of minute gastropods previously associated with the Rissoacea (Mesogastropoda). The radula is rhipidoglossate and the elongate-pupiform shell lacks a nacreous layer. The family has a world-wide distribution in warm temperate to tropical areas and is also known from the Tertiary of France. It is provisionally placed in the superfamily Trochacea.

A generic review of the Rissoidae currently in progress has shown that many genera included in that family are wrongly placed. A few cannot be easily located in any known family and one of these, *Pelycidion* Fischer, is the subject of this review of the group.

Pelycidion venustulum was first named from Hong Kong and Senegal, West Africa. This minute, tall-spired species has been included in the Rissoidae by Thiele (1929), Wenz (1939), Coan (1964) and Ponder (1967). Cossmann (1921) was apparently not aware of the existence of *Pelycidion* but included, in the Hydrobiidae, *Allixia*, a genus he had previously (1913) named. This genus name is based on an Eocene species (Fig. 1A, B) from the Paris Basin and is, in shell characters, identical with *Pelycidion*. *Allixia* recently has been transferred to the Rissoidae (Gougerot, *et al.*, 1975). Another genus name, *Nannoteretispira* Habe, 1961, is also based on a shell (Fig. 1E) virtually identical to that of the type species of *Pelycidion*. A radula and operculum of a single dried animal loaned by Dr. J. McLean was examined and the radula was found to be rhipidoglossate. Because no archaeogastropod family can be used to accommodate the shell seen in *Pelycidion*, or has the same radular details, a new family is proposed for it below.

Thiele (1929) and Wenz (1939) list *Epigrus* Hedley as a synonym of *Pelycidion*. The type species (*Rissoina cylindracea* T. Woods, 1878) of that genus, however, is much larger than

species of *Pelycidion* and has a taenioglossate radula (personal observation).

Abbreviations

AMS – The Australian Museum, Sydney
IRSB – Institut Royal des Sciences Naturelles de Belgique, Brussels
LACM – Los Angeles County Museum of Natural History, Los Angeles
NSMT – National Science Museum, Tokyo
OM – Zoology Museum, Oxford University, Oxford
USNM – National Museum of Natural History, Washington, D.C.

Family Pelycidiidae family nov.

Diagnosis – Shell minute, elongate pupiform, imperforate, with smooth or finely spirally striate teleoconch; protoconch paucispiral or multispiral, with reticulate or spiral sculpture. Aperture subcircular, simple, peristome continuous. No inner nacreous layer. Operculum horny, circular, with central nucleus. Radula rhipidoglossate, c.15 + 2 + 1 + 2 + c.15, central teeth simple, without lateral thickening, about ½ size of lateral teeth, central and lateral teeth multicusped, marginal teeth small, unicuspid. Head-foot and anatomy unknown.

Remarks – The new family is distinguished from other rhipidoglossate families by the combination of characters given in the diagnosis. Its relationships are obscure although it can be regarded as trochacean. A rather heterogeneous family that appears to show some similarities, the Skeneidae, has radulae with short central

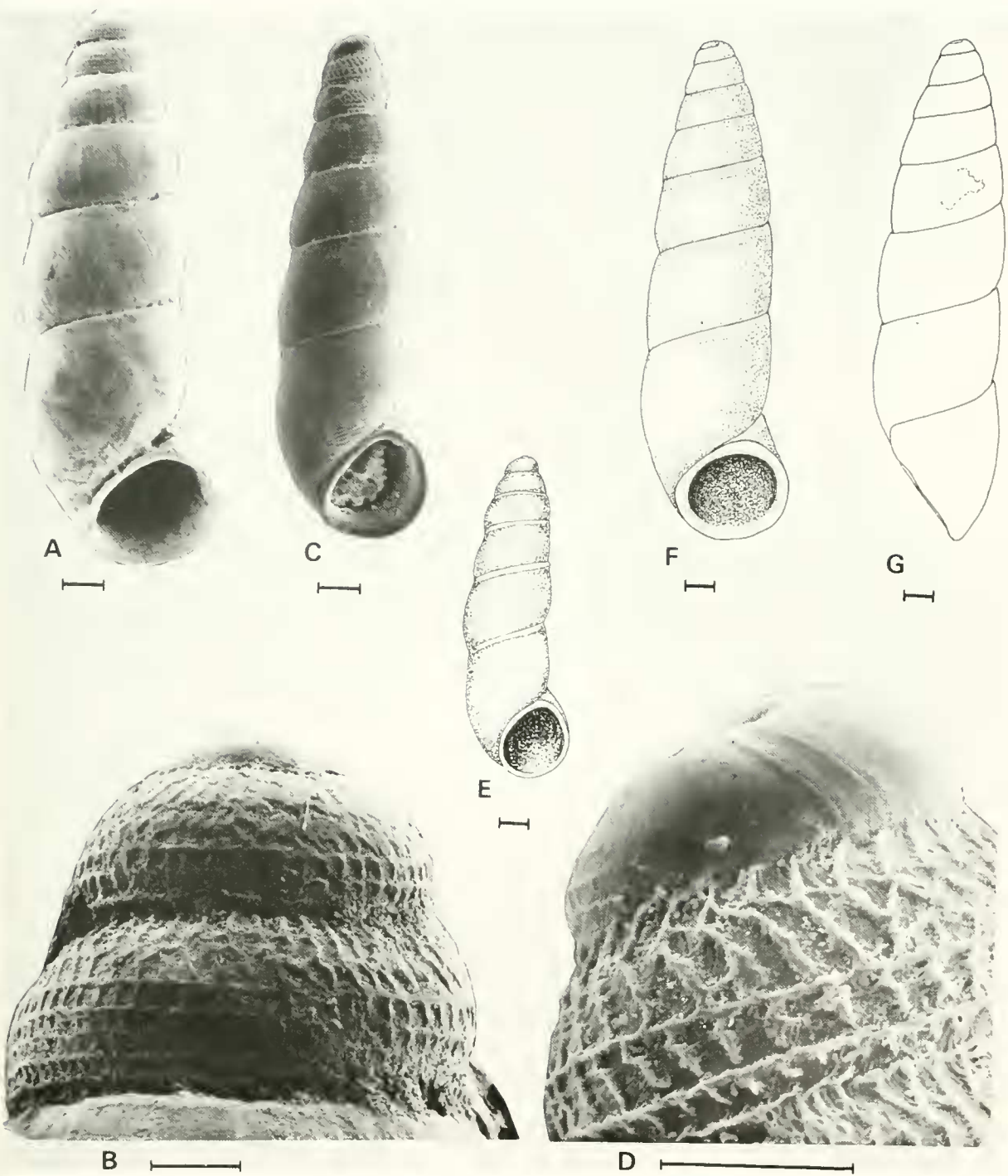


FIG. 1. Shells of *Pelycidion*. A, B, *Pelycidion acicularis* (Cossmann), Bercheres, Eure-et-Loir, Paris Basin, France (Lutetien, Eocene); B, detail of protoconch; C, D, *Pelycidion xanthais* (Watson), Masthead Island, Queensland, Australia, 31-36 m (AMS); D, detail of protoconch; E, *Pelycidion* sp. Dahomey, West Africa, 55 m (LACM); F, G, *Pelycidion venustum* Fischer (in Folin & Perier), Baie di Causado, Cap Blanc, Mauritania, West Africa (IRSB). H, *Pelycidion japonicus* (Habe), holotype. Scales: shells = 0.1 mm; protoconchs = 0.05 mm.

teeth with lateral thickenings and, as in the other trochacean families, the marginal teeth are multicuspate. Skeneids have 2-4 pairs of lateral teeth and the shell has no inner nacreous layer. The shells of the Skeneidae are usually depressed-trochiform to subplanate and frequently umbilicate. In addition the protoconch is paucispiral in all known species. The radulae of Liotiidae, Trochidae and Turbinidae have more than 3 pairs of lateral teeth. The Phasianellidae and Turbinidae have calcareous opercula and differ markedly in radular features. The only trochacean genus that is similar in general shell features is *Halistylus* Dall. This genus has a markedly different radula from *Pelycidion*, having very long marginal teeth and weakly-defined, broad-lateral and central teeth each with only a single, weak cusp (personal observation).

Genus *Pelycidion* Fisher
(in Folin & Périer, 1873)

Type species – *Pelycidion venustulum* Fischer (in Folin & Périer, 1873, p. 182) by monotypy. Recent, Senegal, West Africa (here restricted).

Synonymy –

Pelycidion Fischer (in Folin & Périer, 1873): 316: *nomen nudum*.

Pelecydium err. auct.

Allixia Cossmann, 1913: 141. Type species: *Allixia acicularis* Cossmann, 1913; original designation. Middle Eocene, Parish Basin.

Nannoteretispira Habe, 1961: 273. Type species: *Nannoteretispira japonica* Habe, 1961; original designation. Recent, Japan.

Diagnosis – Shell minute, elongate-pupoid, with subcircular aperture with simple peristome, outer lip prosocline; protoconch of 1½ to about 3 whorls, weakly spirally sculptured if paucispiral, complexly sculptured with raised reticulate threads if multispiral, nucleus smooth or minutely pitted (Figs. 1B, D, 2C, D, 3C, D). Teleoconch of several (about 5-6) whorls, apparently smooth or with spiral striae (Figs. 1A, C, E-G, 2A, B, 3A, B, E). Head-foot unknown. Operculum: circular, with central nucleus, horny, number of whorls not known (Fig. 2E).

Radula – Rhipidoglossate, with relatively large central teeth 4 + 1 + 4, rather long, parallel-sided, cusps small and sharp, primary

cusp about twice length of adjacent cusps. Lateral teeth elongate, with narrow, long, simple bases and recurved cutting edge bearing long, sharp cusps; inner lateral teeth with c.6 cusps, outer lateral teeth with wider cutting edge than inner lateral teeth and with c.9 cusps. Marginal teeth small, curved, with a single cusp, c.15 per ½ row (Fig. 21, G).

Distribution and members of the genus *Pelycidion* – **Indo-Pacific:** (*Mucronalia xanthias* Watson, 1886 (Fig. 1C, D)? = *N. japonica* Habe, 1961 (Fig. 1E)); **South Africa:** (*Nodulus africanus* Bartsch, 1915 = *N. curiosus* Turton, 1932 and *N. becki* Turton, 1932); **eastern Pacific:** (*Nodulus kelseyi* Bartsch, 1911); **Caribbean:** (*Nodulus megalomastomus* Olsson and McGinty, 1958 (Fig. 3A)); **West Africa:** (*P. venustulum* (Fig. 1F, G) and *P. sp.* (Fig. 3B-D)); **Eocene France:** (*A. acicularis* (Fig. 1A) (see Gougerot et al. 1975 for a recent revision of the Tertiary (Eocene- Pliocene) species and subspecies from France)).

Material examined – *P. venustulum*: one lot so named, Dautzenburg Colln. (IRSB, IG10591) one specimen (LACM). *N. japonica*: holotype and paratype (NSMT, 39823). *N. africanus*: holotype (USNM, 250422), 4 specimens (BMNH), 3 specimens (OM). *N. curiosus* and *N. becki* Turton, 1932; types (OM). *N. kelseyi*: holotype (USNM, 111369), a few lots ex LACM (AMS). *A. acicularis*: 1 lot ex J. le Renard (AMS). *M. xanthias*: several lots (AMS). *N. megalomastomus*: holotype and paratype (ANSP); two specimens ex D. Moore (AMS).

Remarks – Fischer records his species (*P. venustulum*) from Hong Kong and Senegal, West Africa. No type material has been located but 4 specimens, only one of which is in reasonably good condition, are identified as this species in the Dautzenberg collection (IRSB, IG10591). These specimens (Fig. 1F, G) from the mission Gruvel (1909-1910) from dredgings in Baie di Cansado, cap Blanc, south of Port-Etienne (now Nouadhibou), Mauritania, West Africa (ex Bavay), agree closely with the original description of the species and with *Nannoteretispira japonica* Habe (Fig. 1E) and with *Mucronalia xanthias* Watson (Fig. 1C, D). Another specimen, in better condition, from 12 miles E.

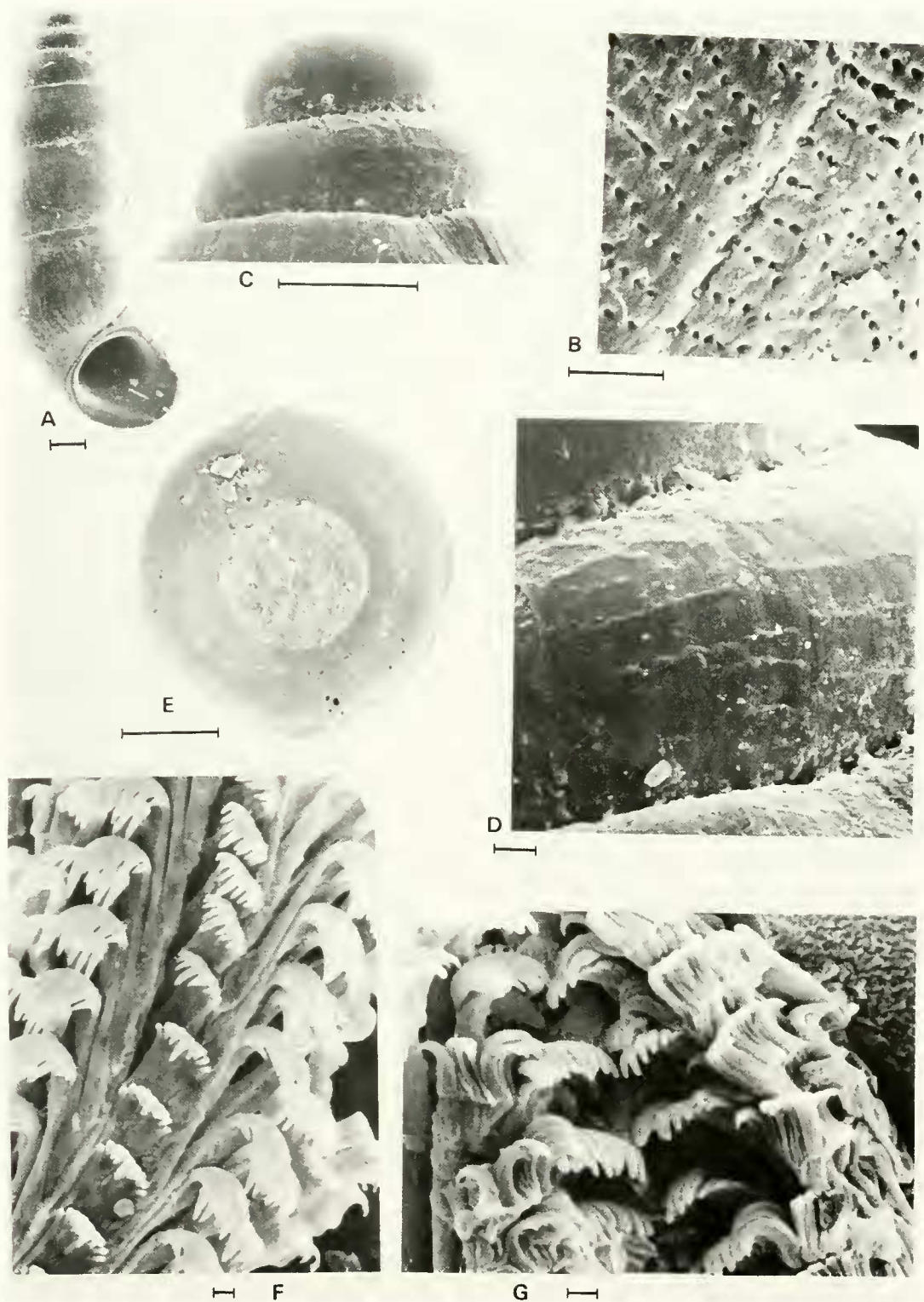


FIG. 2. *Pelycidion cf. kelseyi* (Bartsch), W. wide of East Island, San Benito Islands, Baja California, Mexico (LACM). A-E, shells; B, microsculpture; C, D, protoconch; D, microsculpture of protoconch; E, operculum, inner side; F, G, radula. Scales: A, C, E = 0.1 mm; B, D = 0.01 mm; F, G = 0.001 mm.

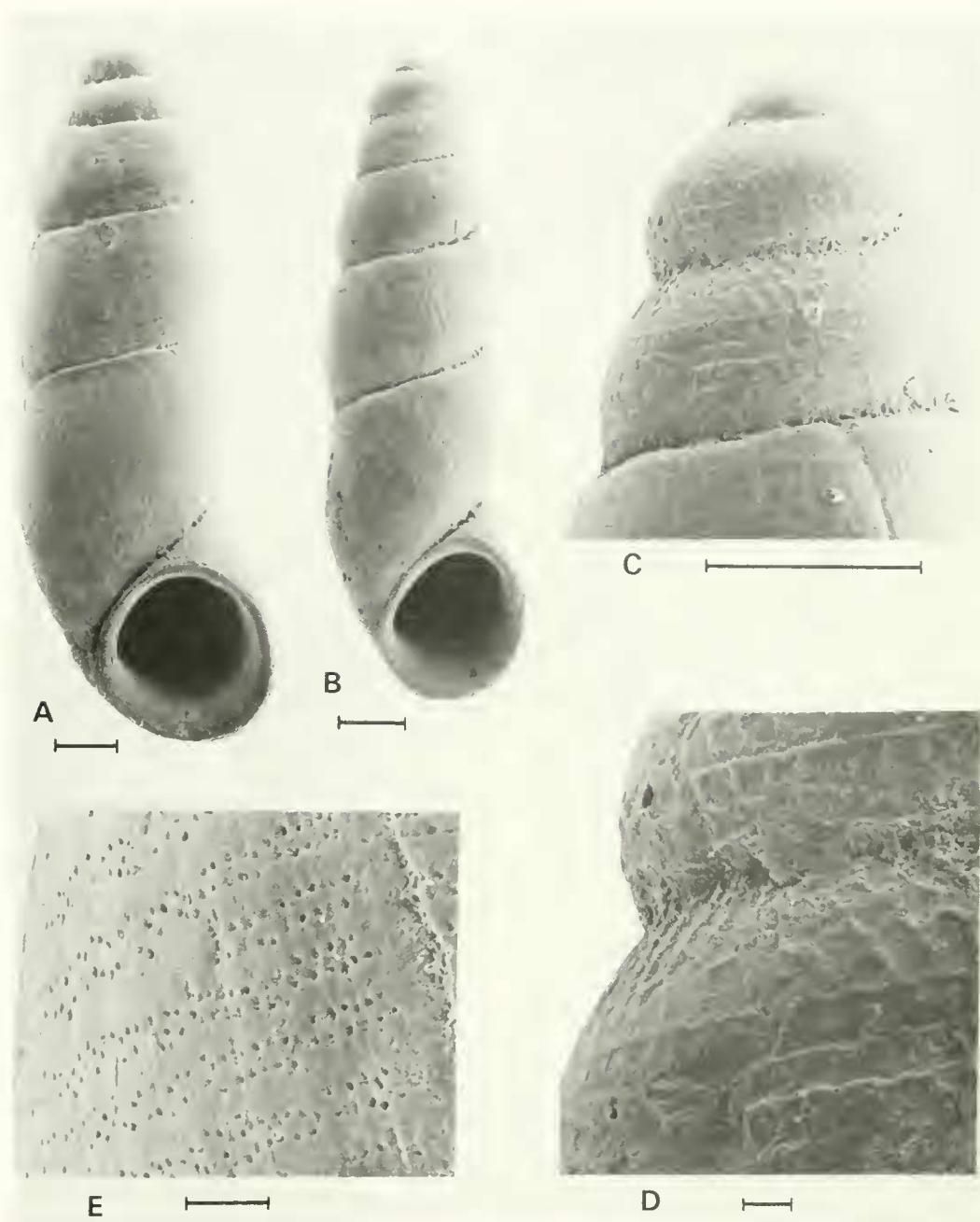


FIG. 3. A, *Pelycidion megalomastoma* (Olsson & McGinty), shell, 2 m, Glovers Reef Lagoon, N.E. British Honduras (AMS). B-D, *Pelycidion* sp., 55 m, 19 km, E. of Cotonou, Dahomey, West Africa (LACM). B, shell; C, protoconch; D, protoconch microsculpture; E, teleoconch microsculpture. Scales: A, B, C = 0.1 mm; D, E = 0.01 mm.

of Cotonou, Dahomey, West Africa (6°24'N, 2°31'E), 55 m. (Fig. 2E) is smaller and has fewer whorls. It is possibly a different species (Fig. 3B-D). Specimens of *Allixia acicularis* Cossmann (Fig. 1A, B) also appear to be congeneric as do several other species listed above. The variation in the sculpture and number of whorls of the protoconch is not considered to be important at the generic level in view of the close similarity of the other shell features.

The interspecific differences in the protoconch are probably due to the adoption of different life history strategies. The West American species and its Caribbean analogue have a paucispiral protoconch with a large initial whorl (Figs. 2C, 3A) suggesting that direct development occurs in these species. A multispiral protoconch (Figs. 1B, D, 3C) suggests a planktotrophic larval stage. This type of protoconch is atypical of the Archaeogastropoda but is commonly encountered in the Mesogastropoda, Neogastropoda and Heterogastropoda.

The original figure of *P. venustum* shows a shell with a markedly convex inner lip. It is here assumed that this feature is erroneously depicted. This inaccuracy presumably led Tryon (1887) to suggest that *Hemistomia* Crosse, a genus in the Hydrobiidae, might be a synonym of *Pelycidion*.

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and Dr. D. Moore donated two specimens of *N. megalomastomus*. Dr. P. Bouchet assisted with the locality details of the specimens of *P. venustum*. Mr. E. K. Yoo and one of us (S.J.H.) are responsible for the S.E.M. work which was carried out in the Electron Microscope Unit, University of Sydney. Miss B. Duckworth and E. K. Yoo did the drawings. We thank Dr. C. S. Hickman for critically reading the manuscript. This work was supported in large part by an Australian Research Grants Committee grant to the senior author.

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